

Appl. No. 10/731,346
Reply to Office Action of September 1, 2005

Attorney Docket No. 2002-1367 /24061.504
Customer No. 42717

REMARKS

Claims 1, 9-11 and 18 have been amended, and Claims 19-28 have been canceled. Claims 1-18 are currently pending in the application. In view of the foregoing amendments and the remarks that follow, Applicants respectfully request reconsideration.

Non-Elected Claims

Claims 19-28 were withdrawn from consideration on the merits, pursuant to a restriction requirement. Claims 19-28 have therefore been canceled. Applicants reserve the right to eventually file a divisional application presenting the subject matter of Claims 19-28 for examination on the merits.

Claim Amendments

The foregoing amendments to Claims 1, 9-11 and 18 correct several typographical errors, including spelling errors and grammatical errors. These changes merely improve the grammatical and idiomatic form of the claims, and do not make any alteration to the intended scope of any claim.

Independent Claim 1

Independent Claim 1 stands rejected under 35 U.S.C. §102(b) as anticipated by Chidambaram U.S. Publication No. 2004/0262694. This ground of rejection is respectfully traversed, for several reasons that are discussed separately below.

CHIDAMBARAM IS NOT PRIOR ART UNDER §102(b)

First, the rejection is based on §102(b), but Chidambaram is not prior art with respect to the present application under §102(b). More specifically, in order to be prior art under §102(b), Chidambaram would need to have a publication date at least one year before the December 9,

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2003 filing date of the present application. (MPEP §706.02(a)(II)(A)). However, Chidambaram was published on December 30, 2004, which is more than one year after the present application was filed. Consequently, the §102(b) rejection is defective, and must be withdrawn. Notice to that effect is respectfully requested.

For completeness, Applicants also wish to discuss §102(e), even though the Office Action does not contain any rejection based on §102(e). The Chidambaram reference is a publication of a non-provisional application that was filed on June 25, 2004, but that filing date is more than six months after the filing date of the present application. The Chidambaram reference includes a claim to the priority of a provisional application filed on June 25, 2003. However, as explained in MPEP §706.02(f)(1)(I)(B):

... The 35 U.S.C. 102(e) date of a reference that did not result from, nor claimed the benefit of, an international application is its earliest effective U.S. filing date, taking into consideration any proper benefit claims to prior U.S. applications under 35 U.S.C. 119(e) or 120 if the prior application(s) properly supports the subject matter used to make the rejection in compliance with 35 U.S.C. 112, first paragraph.

Thus, for purposes of the present application, the Chidambaram reference would only be entitled to the benefit of the filing date of its provisional application under §119(e) "if the prior application(s) properly support the subject matter used to make the rejection in compliance with 35 U.S.C. 112, first paragraph". Chidambaram's provisional application is not a reference of record, but Applicants obtained a copy of the provisional application from the PTO's Web site. A courtesy copy of the provisional application is enclosed. The text and drawings of Chidambaram's provisional application are radically different from the text and drawings of Chidambaram U.S. Publication No. 2004/0262694. In order for a future office action to reject

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Applicants' independent Claim 1 under §102(e), the Examiner would need to (1) formally make Chidambaram's provisional application a reference of record, (2) establish that the subject matter of Claim 1 is disclosed in the provisional application in a manner complying with the first paragraph of §112, and (3) establish that the subject matter of Claim 1 is also disclosed in Chidambaram U.S. Publication No. 2004/0262694 in a manner complying with the first paragraph of §112. The present Office Action does not set forth any rejection under §102(e), much less carry this required burden of proof in support of such a rejection.

THE §102 REJECTION IMPROPERLY RELIES ON MULTIPLE EMBODIMENTS

As discussed in MPEP §2131, anticipation under §102 requires the presence in a single prior art reference of each and every element of the claimed invention, and the elements in the reference must be arranged as required by the claim. In other words, a reference underlying a §102 rejection must not only disclose each and every element in the claim, but must also disclose all of those elements in a single embodiment which contains the entire combination recited in the claim, including all of the interrelationships between the elements that are recited in the claim.

In the present Office Action, the explanation of the §102 rejection based on Chidambaram begins with the phrase "Referring to figures 1-6G . . ." (i.e. all of the drawing figures in Chidambaram). However, as evident from the Brief Description of the Drawings in paragraphs [0013] to [0018], Figures 1-2K disclose a first embodiment, Figures 3-4F disclose a second embodiment, and Figures 5-6G disclose a third embodiment. Stated differently, the Examiner is attempting to make a §102 rejection by combining three separate and distinct embodiments. However, any attempt to combine two or more embodiments, even if they are in the same reference, raises issues of obviousness under 35 U.S.C. §103, and the present Office Action does not carry the burden of establishing a prima facie case of obviousness under §103. Under §102, any given rejection must be based on a single embodiment in the cited reference, and that single embodiment must include the entire combination recited in the claim, including all of the interrelationships between the elements that are recited in the claim. Thus, since the

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present §102 rejection attempts to rely on a combination of three different embodiments from Chidambaram, it is respectfully submitted that the 102 rejection is inherently defective and must be withdrawn.

CHIDAMBARAM DOES NOT ANTICIPATE CLAIM 1

As discussed above, the Office Action attempts to combine three different embodiments in Chidambaram, but this is not proper under §102. It is noted that, in the explanation of the rejection, most of the references to paragraph numbers and drawing figures relate to the embodiment of Figures 1-2K. Accordingly, the discussion that follows will explain why Claim 1 is not anticipated by the embodiment in Figures 1-2K of Chidambaram.

The PTO specifies in MPEP §2131 that, in order for a reference to anticipate a claim under §102, the reference must teach each and every element recited in the claim. Applicants' Claim 1 includes a recitation of:

forming first insulator spacers on the sides of said
conductive gate structure with the procedure used to form said first
insulator spacers also removing a second area of said gate
dielectric layer, wherein said second area of said gate dielectric
layer is not covered by said conductive gate structure or by said
first insulator spacers;

forming a first doped region in an area of said
semiconductor substrate not covered by said conductive gate
structure or by said first insulator spacers; . . .

forming a second doped region in an area of said
semiconductor substrate not covered by said conductive gate

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structure, not covered by said first insulator spacers, and not covered by said second insulator spacers.
(Underlining added).

Chidambaram fails to disclose at least the portions of Claim 1 that are underlined above.
In more detail, paragraph [0031] of Chidambaram explains that:

Referring to FIGS. 2C and 2D, a conductive gate electrode material (e.g., polysilicon) has been deposited and patterned via an etching process 215 to form a gate electrode 214 overlying the gate oxide 212. An offset spacer 216 is then formed on the lateral edges 214a of the gate electrode, wherein the offset spacers have a width 216a of about 10-50 nm. Recesses 218 are then formed in the active areas using an etch process 219, wherein the gate electrode 214 and isolations areas 210 serve as a mask.
(Underlining added).

Taking into account the two underlined occurrences of the word "then", the process disclosed in Chidambaram involves the following distinct and successive steps:

1. Deposit an electrode material and etch it to form the gate electrode 214.
2. After formation of the gate electrode has been completed, form the offset spacers 216 (in a manner that is not specified).
3. After formation of the offset spacers has been completed, carry out etching 219 to form the recesses 218 in the substrate 204.

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There is no teaching in Chidambaram that the procedure used to form the offset spacers 216 also removes part of a gate dielectric layer 212. In fact, Chidambaram provides no explanation of how the offset spacers 216 are formed. As best understood, however, the etch that patterns the gate electrode 214 also patterns the gate dielectric layer 212, and Chidambaram clearly teaches that this etch is completed before Chidambaram starts the process of forming the spacers 216. Accordingly, Chidambaram fails to teach the limitation in Claim 1 reciting that "the procedure used to form said first insulator spacers also removing a second area of said gate dielectric layer".

As discussed above, paragraph [0031] of Chidambaram teaches that an etch process 219 is used to create recesses 218 in the substrate 204. Paragraph [0032] explains that these recesses 218 are then filled with a carbon-doped silicon material 224. Paragraph [0033] explains that an implant process 234 is carried out to create extension regions 236 in the material 224 (Figure 2G). Paragraph [0034] explains that an implant process 243 is then carried out to create extension regions 242 in the material 224 (Figure 2I). These regions 236 and 242 are created in the material 224 that has been deposited in the recesses 218 in the substrate 204, rather than in the substrate 204 itself. Therefore, Chidambaram fails to teach the limitations in Claim 1 reciting that a first doped region is formed "in an area of said semiconductor substrate", and that a second doped region is formed "in an area of said semiconductor substrate".

Chidambaram thus does not disclose each and every element recited in Claim 1. Claim 1 is therefore believed to be allowable over Chidambaram, and notice to that effect is respectfully requested.

Independent Claim 10

Independent Claim 10 stands rejected under 35 U.S.C. §102(b) as anticipated by Chidambaram. This ground of rejection is respectfully traversed. The rationale given in the Office Action for the rejection of Claim 10 is apparently the same rationale given for the rejection of Claim 1. Applicants' Claim 10 includes a recitation of:

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performing a dry etch procedure to first define first
insulator spacers on the sides of said conductive gate structure via
etching of said insulator layer, and then to remove exposed
portions of said high k gate dielectric layer, wherein said exposed
portions of said high k gate insulator layer are portions not covered
by said conductive gate structure or by said first insulator spacers;
forming a lightly doped source/drain region in an area of
said semiconductor substrate not covered by said conductive gate
structure or by said first insulator spacers;
forming second insulator spacers on the sides of said first
insulator spacers; and
forming a heavily doped source/drain region in an area of
said semiconductor substrate not covered by said conductive gate
structure, not covered by said first insulator spacers, and not
covered by said second insulator spacers.
(Emphasis added).

For the same basic reasons discussed above in association with Claim 1, it is respectfully submitted that Chidambaram fails to disclose at least the portions of Claim 10 that are underlined above. Chidambaram thus does not teach each and every element recited in Claim 10. Claim 10 is therefore believed to be allowable over Chidambaram, and notice to that effect is respectfully requested.

Dependent Claims

As to dependent Claims 5, 8, 12, 14-15 and 18, it is initially noted that the Office Action takes inconsistent positions. More specifically, these claims are not listed in the initial statement of the §102 rejection at lines 4-5 on page 3, but they are each mentioned in the explanation of the

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§102 rejection (i.e. at lines 4-5 and 8-9 on page 4, and at lines 6-7, 10-13 and 18-21 on page 5). Thus, the Office Action appears to assert that dependent Claims 5, 8, 12, 14-15 and 18 are each anticipated by Chidambaram. On the other hand, in lines 9-12 on page 6, the Office Action states that these same dependent claims are rejected under 35 U.S.C. §103 as obvious over Chidambaram, taken in view of other references. The Office Action then goes on to state at lines 14-16 on page 6 that Chidambaram does not teach the subject matter of these dependent claims. Thus, the Office Action effectively asserts on pages 4-5 that Chidambaram discloses all of the limitations in dependent Claims 5, 8, 12, 14-15 and 18, but then the Office Action goes on to take a directly opposite position on page 6, by stating that Chidambaram does not disclose the subject matter of these dependent claims. Consequently, the Office Action takes inconsistent positions, and fails to clearly set forth the basis for the rejection of these dependent claims.

In any event, Claims 2-9 and Claims 11-18 respectively depend from Claim 1 and Claim 10, and are believed to be patentably distinct from the art of record, for example for the same reasons discussed above with respect to Claims 1 and 10.

Conclusion

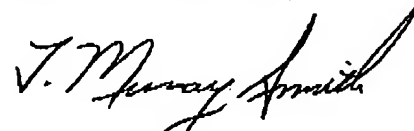
Based on the foregoing, it is respectfully submitted that all of the pending claims are fully allowable, and favorable reconsideration of this application is therefore respectfully requested. If the Examiner believes that examination of the present application may be advanced in any way by a telephone conference, the Examiner is invited to telephone the undersigned attorney at 972-739-8647.

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Although Applicants believe that no fee is due in association with the filing of this Response, the Commissioner is hereby authorized to charge any additional fee required by this paper, or to credit any overpayment, to Deposit Account No. 08-1394 of Haynes and Boone LLP.

Respectfully submitted,



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Enclosures: Courtesy Copy of U.S. Provisional Application No. 60/482,573

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